

REMARKS

The Office Action dated January 10, 2007 has been received and its contents carefully noted. In response thereto, applicant has amended existing claims and added new claims 79-82 in an effort to place the application in condition for allowance. Reconsideration of the rejections of the claims is respectfully requested in view of the foregoing amendments and the following remarks.

Claim Rejections - 35 U.S.C. §§ 102 and 103

With regard to the rejections under 35 U.S.C. §§ 102 and 103, claims 30-33, 36, 38, 40, 41, 48 and 56 have been rejected as being completely shown by Great Britain Patent No. 922,955 (GB '995). To reject claims 34-35, the Examiner has modified GB '995 using Japanese patent 55-164019 (JP '019) on the grounds of alleged obviousness. Claim 37 has been rejected on the grounds of alleged obviousness by combining GB '995 with Carey et al. (U.S. Patent No. 4,154,608). Claims 39, 42 and 49-52 stand rejected as being obvious in view of GB '995. In rejecting claim 43, GB '995 has been modified based on a 1999 article in POWDER TECHNOLOGY by Muller et al. on the grounds of alleged obviousness. The Examiner considers claim 44 as being allegedly obvious when GB '995, the Carey et al. patent and the Muller et al. article are combined. Claims 45-46 have been rejected as being allegedly obvious when GB '995 is combined with JP '019, Japanese patent 03-090543 (JP '543) or Naeser et al. patent (U.S. Patent No. 3,357,827). Claim 47 has been rejected as being allegedly obvious in view of GB '995 when combined with WO 92/14568. To reject claims 53-55, GB '995 has been modified based on alleged obviousness by combining it with a portion of Volume 7 of the ASM

Handbook. Applicant respectfully disagrees with these rejections for the following cogent reasons.

In order to further emphasize the novel features of the present invention, claim 30 has been amended to include some of the limitations from claims 31 and 49. The claim 31 limitations relate to the raw material being "chosen from at least one of the material groups consisting of iron powder, sponge iron, iron oxide powder, steel powder and finely divided steel turning scrap" while the claim 49 limitations relate to the denitriding step being done in a temperature range between about 250°C to 400°C. Claim 50, amended to be dependent on claim 30, indicates the preferable temperature range is between about 300°C to 350°C. New claims 79-82 indicate that the finely divided steel turning scrap or the finely divided raw material in general have a particle size of 50 to 500µm as disclosed on page 3, paragraphs 1-2 of the specification. As explained further hereinafter, the invention using these steps avoids agglomeration thereby providing a very well defined finished product.

GB '955 discloses a technique according to which a thin steel scrap or thin (0.5 mm) steel plate scrap is used as a raw material. After nitriding in ammonia gas, pulverizing of the nitrified steel is performed to a desired particle size. According to one embodiment, the pulverized product is screened. To finish, the pulverized product is denitrified thermally at a temperature about 700°C in the absence of oxygen or by a denitriding gas at 800°C in the absence of oxygen.

The GB '955 technique suffers from substantial drawbacks. Use of the steel scrap raw material, which is comparatively coarse, results in a slow and incomplete nitriding whereby an

extensive recirculation of a pulverized product residue is required. In addition, the denitridding iron powder will contain considerable amounts of contaminating nitrides of alloying elements originating from the steel raw material. As denitridding occurs at a comparatively high temperature, there is extensive undesirable agglomeration due to sintering thereby leading to a final product which is undefined or difficult to define.

On the other hand, the present invention employs a raw material in the form of powder and/or in the form of a porous finely fragmented sponge iron and/or finely divided turning scrap to provide conditions for improving the process by facilitating more complete nitriding, etc. Further, for manufacturing iron powder, an iron raw material will result in a cleaner iron powder than a steel raw material. In addition to this, a low denitridding temperature will result in the very important advantage of avoiding agglomeration which results in a very well-defined finished product.

Thus, the invention as specified in the amended independent method claim 30 is new and novel with respect to GB '955. Further, the present invention is non-obvious in view of GB '955 which leads away from the present invention insofar as the difference in the choice of raw material as well as the differing temperature range for the denitridding step. The criticality of the temperature range is discussed in the paragraph at the bottom of page 5 of the present application where it is indicated that no agglomeration at all occurs below about 350°C.

The Examiner recognizes some of the inherent deficiencies of the GB '955 reference and attempts to correct them by scouring the prior art and combining bits and pieces of JP '019, Carey et al., the Muller et al. article, JP '543, Naeser et al., WO 92/14568 and a portion of

Volume 7 of the ASM Handbook into the GB '955 reference. However, these added references do not make up for the above noted basic deficiencies in the GB '955 reference so the combinations proposed by the Examiner still fall far short of the present invention. In particular, the added references fail to disclose the use of the claimed raw material or the claimed temperature range. Thus, it is not seen how the claimed invention can be derived from GB '955, JP '019, Carey et al., the Muller et al. article, JP '543, Naeser et al., WO 92/14568 and the ASM Handbook as these references, alone or in combination, simply do not teach or suggest what is set out in the applicant's claims and do not provide the basis for developing the invention to persons having ordinary skill in the art to which the subject matter pertains. The combination of features in the amended claims solve the problem of providing a very well defined product in an efficient way. This solution is in no way taught by the cited prior art and must therefore be considered to involve an inventive step. Accordingly, the Examiner's reliance on these prior art references is not properly grounded and the rejections based thereon should be withdrawn.

In addition, it is only when the Examiner looks to applicant's own disclosure that the Examiner can allege obviousness by choosing these bits and pieces of the prior art references and then combining these bits and pieces together based on alleged obviousness. Such rejections are merely improper hindsight reconstruction of applicant's own invention using applicant's own disclosure.

Accordingly, it is submitted that the present invention as claimed is readily distinguishable from the prior art references for the reasons indicated. Applicant's invention is not disclosed by any of the prior art and there is no fair basis for alleging that applicant's invention is obvious in regard to such prior art. If the invention was obvious, it would have been

adopted before in view of its advantages. As it appears as though the Sections 102 and 103 rejections based on the Gross patent are incorrect, they should be withdrawn.

Conclusion


In view of the foregoing amendments and remarks, it is respectfully submitted that all of the presently pending non-withdrawn claims are allowable and early favorable action is earnestly solicited. The Examiner is invited to call applicant's attorney if any questions remain following review of this response.

Respectfully submitted,

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By _____


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